Annual Report on Public Safety Wireless Voice and Data Communications in the Commonwealth of Kentucky

Submitted by
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Commonwealth Office of Technology
Finance and Administration Cabinet
September 15, 2009

Kentucky
Wireless Interoperability
Executive Committee

A Report to the Interim Joint Committee on Seniors, Veterans, Military Affairs, and Public Protection and the Interim Joint Committee on State Government on progress and activity by agencies of the Commonwealth to comply with standards to achieve public safety communications interoperability.

Kentucky
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Executive Summary

In the last year, Kentucky has endured some of the worst weather in its recorded history. Severe windstorms toppled trees and knocked power lines down across much of the state one year ago. This was followed by several other serious events which finally capped off with a crippling statewide ice storm that cut many services to Kentuckians for weeks on end and resulted in the Governor declaring the state a disaster area and requesting federal assistance. It seemed that we were barely finished cleaning up after the ice storm when severe thunderstorms stuck across Kentucky's major metropolitan areas bringing severe flooding and yet another cleanup effort. The following press release from Governor Steve Beshear's Communications Office illustrates some of the challenges faced in the last 12 months.

> This week's storm marks the second largest power outage in the state's history. The only larger outage occurred six months ago in the wake of Hurricane Ike when 600,000 customers lost power. With this storm – and with Hurricane Ike six months ago – Kentucky has now had the two largest outages in the commonwealth's history. *

Through each of these events the public safety communications capabilities of the state were critically needed and relied on to bring services and aid to Kentucky citizens. Certainly no system is 100% infallible and the various communications systems of Kentucky are not an exception. Kentucky's communications systems were taxed to the breaking point, and while communications outages did occur, extended communications failures were avoided thanks to the benefits received from several ongoing projects and past initiatives championed by the KWIEC.

Purpose

The purpose of this document is to report as required by KRS 42.738 (1) which states "The executive director shall report by September 15 annually to the Interim Joint Committee on Seniors, Veterans, Military Affairs, and Public Protection and the Interim Joint Committee on State Government on progress and activity by agencies of the Commonwealth to comply with standards to achieve public safety communications interoperability."

This report will serve to update these committees and legislative members on the activities and progress of the Kentucky Wireless Interoperability Executive Committee (KWIEC) since the last reporting cycle in the following areas.

- Success in meeting the mandates as defined in the Kentucky Revised Statutes
- Progress toward the long term and annual goals adopted by the KWIEC
- Updates on the operational programs tracked by and reported to the KWIEC
- Recommended wireless and interoperability communications Pilots and Projects
- Changes made to streamline or simplify the processes used by the KWIEC
- Other recommendations for the General Assembly as applicable to public safety communications

Authority

Since its creation in 2003, the KWIEC has acted under the provisions and authority of Kentucky Revised Statutes 11-5161, 11-5162, and 11-5163. In 2009 these statutes were repealed and reenacted as KRS 42.734, KRS 42.736, and KRS 42.738 respectively as part of the cabinet reorganization project as detailed in SB-181.

When signed into law by the Governor in March of 2009, the content of these reenacted statutes was unchanged with one exception. The single change entailed the removal of the Director of the 911 as a KWIEC voting member. This change was in response to the elimination of the position under the reorganizations explained within SB-181. This change reduced the body from twenty-one voting members to twenty. These twenty members of the Kentucky Wireless Interoperability Executive Committee will continue to operate under the directives set forth in the Kentucky Revised Statutes.

Background

This section is reprinted from year to year with updates added as required. It is kept to provide readers unfamiliar with the KWIEC with a summary of its history.

HB 309

The Kentucky General Assembly passed HB309 creating the Kentucky Wireless Interoperability Executive Committee (KWIEC), which is administered through the Commonwealth Office of Technology.

The committee benefits the Commonwealth by:

- Creating a nationally recognized name, the State Interoperability Executive Committee (SIEC), and structure as recommended by the Federal Communications Commission;
- Encouraging more involvement from interested agencies with the addition of local representatives from municipal and county government, police, fire, sheriff, EMS, and a 911 dispatch representative;
- Instituting an annual reporting mechanism whereby the chief information officer updates the Joint Interim Committee on Seniors, Veterans, Military Affairs, and Public Protection, and the Interim Committee on State Government;
- Addressing communications interoperability, a critically important homeland security issue;
- Advising and making recommendations to the chief information officer of the Commonwealth regarding strategic wireless initiatives, in order to achieve public safety voice and data communications interoperability.

HB 226

In 2004, HB 226 was passed by the 2004 General Assembly and signed into law by Governor Ernie Fletcher. The Bill amended KRS 11.5162 to expand the definitions of "frequency," "interoperability," and "standards," and create definitions for "public safety shared infrastructure" and "primary wireless public safety voice or data communications systems," and excludes "911" telephone systems from the definition of "primary wireless public safety voice or data communications systems."

With the passage of HB 226, KRS 11.5163 was amended to include these requirements:

- The development and recommendation of required architecture and standards will ensure that new or upgraded Commonwealth public safety communications systems will interoperate.
- The Kentucky Wireless Interoperability Executive Committee shall be responsible for the evaluation and recommendation of all wireless communications architecture, standards, and strategies.
- All state agencies in the Commonwealth shall present all project plans for primary wireless public safety voice or data communications systems for review and recommendation by the committee, and the committee shall forward the plans to the chief information officer for final approval. Local government entities shall present project plans for primary wireless public safety voice or data communications systems for review and recommendation by the Kentucky Wireless Interoperability Executive Committee.
- The committee shall develop funding and support plans that provide for the maintenance of and technological upgrades to the public safety shared infrastructure, and shall make recommendations to the chief information officer, the Governor's Office for Policy and Management, and the General Assembly.
- The chief information officer shall examine the project plans for primary wireless public safety voice or data communications systems of state agencies and shall determine whether they meet the required architecture and standards for primary wireless public safety voice or data communications system.

SB 181

In 2009, SB 181 was passed by the General Assembly and signed into law by Governor Steve Beshear.

With the passage of SB 181, several statutes were repealed and reenacted. As it pertains to the KWIEC the following occurred:

- KRS 11.5161 was repealed and reenacted as KRS 42.734 without change to content.
- KRS 11.5162 was repealed and reenacted as KRS 42.736 without change to content.
- KRS 11.5163 was repealed and reenacted as KRS 42.738 with the following changes.
    - The membership of the KWIEC is reduced to 20 members.
    - The Director of 911 position was eliminated as a voting member of the board.

The entire text of SB-181 is available online at:

http://www.lrc.ky.gov/record/09rs/SB181.htm

The entire text of KRS 42.734, 42.736, and 42.738 is available online at

http://www.lrc.ky.gov/KRS/042-00/734.PDF

http://www.lrc.ky.gov/KRS/042-00/736.PDF

http://www.lrc.ky.gov/KRS/042-00/738.PDF

KWIEC Membership

The Kentucky Wireless Interoperability Executive Committee (KWIEC) membership has been fairly stable for the last year. While the group has lost members to retirement or transfer, the brunt of the committee has remained.

The KWIEC continues to be staffed by state and local representatives who are senior decision makers in their agencies. These members play a key role in ensuring that every major agency has a voice in the KWIEC and ultimately in the direction of the interoperability initiatives and policies in the Commonwealth.

The table below lists the voting members on the committee and the agency they have been appointed to represent.

Name	Representing
Jim Barnhart	Chairperson
Steve Rucker	Commonwealth Office of Technology
<DELETED by SB-181>	~~Office of the 911 Coordinator~~
Michael Harris	Kentucky Educational Television
Dan Mauer	Transportation Cabinet
Don Pendleton	Justice Cabinet
Col. Brad Bates	Kentucky State Police
Col. Robert Milligan	Department of Fish and Wildlife Resources
Ken Jorette	Natural Resources and Environmental Protection
Col. Rodney Hayes	Division of Emergency Management
Mary Pedersen	Kentucky Office of Homeland Security
Rodney Murphy	Cabinet for Health and Family Services
Pamela Collins	Council on Postsecondary Education
Lonnie Lawson	The Center for Rural Development
Rebecca A. Hopkins	Kentucky League of Cities
Steve L. Cornish	Kentucky Association of Counties
Michael Ward	Kentucky Association of Chiefs of Police
<EMPTY>	Association of Fire Chiefs
Wayne Wright	Kentucky Sheriff's Association
Charles M. O'Neal	Kentucky Board of Emergency Medical Services
Mitch Mitchell	Kentucky National Emergency Number Association

Table 1 – KWIEC Membership

After the KWIEC was informed of the change which eliminated the 911 slot, the KWIEC voted to request the Governor reinstate the 911 coordinator. The Governor's Office responded indicating that it was not possible to change the KRS in the time desired, but it was possible for the Governor to task the individual hired to this position with an additional responsibility as a member of the KWIEC.

KWIEC Support

The KWIEC is supported by both services and personnel. Since the KWIEC is staffed with members who are senior decision makers in their respective organizations, they each have full time responsibilities. These members simply do not have the time needed to perform many of the ongoing tasks associated with the management and administration of the KWIEC. Consequently, the KWIEC has several personnel tasked to provide support to the group. These personnel are usually members of groups and are described in the following pages.

KWIEC Website

While not a support person, the KWIEC website (www.kwiec.ky.gov) is used as support for the group. It is the primary venue for disseminating information concerning the KWIEC to the public, and to public safety and other first responder agencies. It provides links to important agencies involved in interoperability and points of contact where citizens can pose questions or request information. Finally, it explains several processes and procedures needed to submit wireless project evaluations required for compliance with Kentucky Revised Statutes.

It will continue to promote the development of wireless standards and methodologies, list approved standards and methodologies, and provide resources that include KWIEC meeting minutes, special event announcements, conference information, research documents, web links, and other issues and interoperability programs.

KWIEC Informational Briefings

The technology and information briefings will continue to be used as a method to advise the KWIEC membership on new technologies, planned projects, and agency initiatives. Each quarter, a portion of the meeting is set aside solely to update the members and to ensure that they are aware of the wireless and interoperability issues affecting the state.

Dedicated KWIEC Facilitator

The KWIEC plays a vital role in guiding the public safety wireless communications and interoperability efforts, projects, and initiatives of the commonwealth. As with all committees, the KWIEC and its subcommittees and workgroups require support. To that end, the Commissioner of the Commonwealth Office of Technology has assigned a dedicated KWIEC Facilitator to provide the KWIEC with a single Point of Contact

with which to work. The Facilitator will act as the primary point of contact for any issues dealing with the KWIEC and will maintain the KWIEC website and the listserv.

In addition to supporting the KWIEC, the Facilitator will assist any workgroups or subcommittees dedicated to the KWIEC. The Facilitator will act as a non-voting member of these groups to avoid any conflict of interest and will contribute to each of these groups as desired by the chair of that group.

The individual assigned to this position will also prescreen all project assessments and work with local and state agencies in submitting their project assessments. Projects which fall into the preapproved category will be reviewed, evaluated, and approved by the Facilitator. The Facilitator will also work with granting agencies such as the Kentucky Office of Homeland Security and the Justice Department to ensure that the KRS is adhered to for primary wireless communications projects.

The individual assigned to this position will also plan and conduct each meeting of the KWIEC and will be available to support any KWIEC members with KWIEC business when requested. This individual will also work with the Governors Office, the Legislative Research Commission, and other key agencies in support of the KWIEC.

Finally, the Facilitator will write the Annual Public Safety Report (this report) with input from key agencies, schedule its printing, and provide it to the appropriate committees.

Public Safety Working Group (PSWG)

KRS 42.738 (9) - The Public Safety Working Group is hereby created for the primary purpose of fostering cooperation, planning, and development of the public safety frequency spectrum as regulated by the Federal Communications Commission, including the 700 MHz public safety band. The group shall endeavor to bring about a seamless, coordinated, and integrated public safety communications network for the safe, effective, and efficient protection of life and property. The Public Safety Working Group membership and other working group memberships deemed necessary shall be appointed by the chair of the Kentucky Wireless Interoperability Executive Committee.

Previously the Public Safety Working Group (PSWG) was a group of wireless communications subject matter experts charged with writing the FCC Region 17 700MHz Plan and for overseeing the 800MHz re-banding for the Commonwealth. This group only concentrated on plan development and frequency coordination with surrounding states. With the completion of this plan, this group now has the time to work on its other key requirement as described in the KRS; specifically - ***'The group shall***

endeavor to bring about a seamless, coordinated, and integrated public safety communications network for the safe, effective, and efficient protection of life and property'.

With the elimination of the Architecture and Standards Working group (ASWG), the PSWG is now responsible for and acts as the Technical and Engineering arm of the KWIEC. The group is chaired by the state communication interoperability coordinator and supplemented by members who are each communications experts in their field. The KWIEC Facilitator supports this group in all of its meetings.

The Public Safety Working Group has been tasked with the following responsibilities:

- Evaluate new technology and technical solutions to planned projects.
- Using the State Communications Interoperability Plan (SCIP) as a source, begin efforts to create a long term (ten year or more) plan which makes the eventual voice and data convergence of technology a priority.
- Publish recommended minimum requirements for all radio systems.
- Maintain an inventory of State radio assets.
- Conduct an annual review of State radio infrastructures.
- Recommend projects to the KWIEC.
- Conduct an annual review of the SCIP, make recommendations for changes, and provide a report back to the KWIEC.
- Provide periodic briefings to the KWIEC as required.

The membership of the PSWG is shown in the table below.

Name	Representing	Position
Derek Nesselrode	State Interoperability Coordinator / KSP	Chair
Bob Stephens	Office of Emergency Management	Co-Chair
Danny Ball	Center for Rural Development	Member
Dave Barker	Department of Military Affairs	Member
Drew Chandler	Department of Heath Services	Member
Jeff Mitchell	Commonwealth Office of Technology/KEWS	Member
Ron Pannell	Louisville Metro	Member

Table 2 – PSWG Membership

The PSWG meets monthly and is also present at all KWIEC meetings.

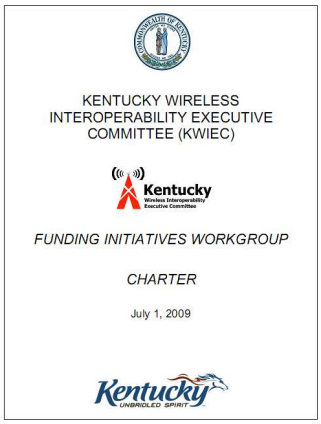
Funding Initiatives Working Group (FIWG)

KRS 42.738 (3) - The committee shall develop funding and support plans that provide for the maintenance of and technological upgrades to the public safety shared infrastructure, and shall make recommendations to the executive director, the Governor's Office for Policy and Management, and the General Assembly.

KRS 42.738 (9) - … The Public Safety Working Group membership and other working group memberships deemed necessary shall be appointed by the chair of the Kentucky Wireless Interoperability Executive Committee.

KRS 42.738 (10) - The committee may establish additional working groups as determined by the committee.

The Funding Initiatives Workgroup was created in June 2009 by a unanimous vote of the KWIEC. This group was created to address the concerns of the KWIEC membership which felt that additional resources were needed to meet the requirement as described in the KRS. The Charter for the Funding workgroup was written by a senior KWIEC member, submitted to the KWIEC for review, and ultimately adopted.


KENTUCKY WIRELESS
INTEROPERABILITY EXECUTIVE
COMMITTEE (KWIEC)

Kentucky

FUNDING INITIATIVES WORKGROUP

CHARTER

July 1, 2009

Kentucky

The Chairperson of the Funding Workgroup has been selected but the membership has yet to be filled. It is expected that this will occur by October 2009 with the Chairperson setting their initial agenda and tasking by the end of the year.

The current membership is listed in the table below.

Name	Representing	Position
Col. Robert Milligan	Department of Fish and Wildlife Resources	Chair
- TBD -		Member
- TBD -		Member
- TBD -		Member
- TBD -		Member

Table 3 – FWG Membership

Deactivated Groups

Architecture and Standards Working Group

After the KWIEC was established, it was decided to create and staff a dedicated group of subject matter experts which would report to the KWIEC directly. This group was needed and created to review current technologies, prescreen all projects submitted to the KWIEC, and to make recommendations to the KWIEC. Most importantly, the creation of this group allowed the Public Safety Working Group to concentrate on the various frequency rebanding and governance issues which were time critical in those first years.

Over time, the Architecture and Standards Working Group (ASWG) and the Public Safety Working Group (PSWG) began working on many of the same issues. Moreover, since the membership requirements of these groups were nearly identical and the resources to staff them were limited, the individuals asked to serve were often the same.

The primary function of the ASWG was to review each project plan submitted to the KWIEC and to work with local agencies to assure that their desired projects were in compliance with approved standards and to make recommendations as required. This process ensured that KWIEC members were not inundated with non-viable projects.

Since the ASWG was an ad hoc group asked to assist the PSWG in its mission, and since that requirement is now manageable by the PSWG, it was decided to merge these groups into the PSWG and to expand the PSWG into a more functional arm of the KWIEC. In addition to this, the PSWG has been asked to expand its responsibilities by absorbing everything required of the ASWG and to provide the KWIEC with more information from which to make its decisions.

KWIEC Mandates and Goals

KWIEC Mandates

The KWIEC has several mandates as described by KRS 42.738. They have been divided by KRS subsection to properly describe the actions taken by the KWIEC in each of these areas and are expanded on in the following sections.

I. *KRS 42.738 (1) - The executive director shall establish and implement a statewide public safety interoperability plan. This plan shall include the development of required architecture and standards that will ensure that the new or upgraded Commonwealth public safety communications systems will interoperate.*

II. *KRS 42.738 (1) (Continued) - The Kentucky Wireless Interoperability Executive Committee shall be responsible for the evaluation of all wireless communications architecture, standards, and strategies. The executive director shall provide direction, stewardship, leadership, and general oversight of information technology and information resources.*

III. *KRS 42.738 (1) (Continued) - The executive director shall report by September 15th annually to the Interim Joint Committee on Seniors, Veterans, Military Affairs, and Public Protection and the Interim Joint Committee on State Government on progress and activity by agencies of the Commonwealth to comply with standards to achieve public safety communications interoperability.*

IV. *KRS 42.738 (2) – The Kentucky Wireless Interoperability Executive Committee shall serve as the advisory body for all wireless communications strategies presented by agencies of the Commonwealth and local governments. All state agencies in the Commonwealth shall present all project plans for primary wireless public safety voice or data communications systems for review and recommendation by the committee and the committee shall forward the plans to the chief information officer for final approval. Local government entities shall present project plans for primary wireless public safety voice or data communications systems for review and recommendation by the Kentucky Wireless Interoperability Executive Committee.*

V. *KRS 42.738 (3) - The committee shall develop funding and support plans that provide for the maintenance of and technological upgrades to the public safety shared infrastructure, and shall make recommendations to the executive director, the Governor's Office for Policy and Management, and the General Assembly.*

VI. *KRS 42.738 (4) - The executive director shall examine the project plans for primary wireless public safety voice or data communications systems of state agencies as required by subsection (2) of this section, and shall determine whether they meet the required architecture and standards for primary wireless public safety voice or data communications system.*

Establish and Implement the Statewide Public Safety Interoperability Plan

- *KRS 42.738 (1) - The executive director shall establish and implement a statewide public safety interoperability plan. This plan shall include the development of required architecture and standards that will ensure that the new or upgraded Commonwealth public safety communications systems will interoperate.*

As reported last year, the Commonwealth completed and published its Statewide Communications Interoperability Plan (SCIP)*. This plan established near term and long term interoperability initiatives and is used as the state's primary tool in planning interoperability initiatives. Most recently, it was used by the KWIEC and the State Interoperability coordinator in the decision making process to prioritize funding received from the Public Safety Interoperability Communications (PSIC) Grant.

Efforts to continually update and improve the state interoperability plan are vital to the plan remaining an effective tool for decision makers. To that end, an annual review is conducted and revisions made as deemed necessary. As part of the annual review of the SCIP for 2008, the Office of Emergency Communications was invited to host a KWIEC sponsored planning and implementation workshop to which they agreed.

SCIP Workshop

In March of 2009, the Federal Office of Emergency Communications hosted a KWIEC sponsored day long SCIP Workshop designed to assist the state in updating and prioritizing the initiatives within the SCIP. Twenty-six senior decision makers from the KWIEC and several major stakeholder agencies were present to participate. At the conclusion of this workshop, participants determined that three major initiatives needed to be addressed. These three critical initiatives were:

- Complete a statewide communications equipment inventory
- Host ongoing annual State, regional and local exercises via the Kentucky Exercise and Evaluation Program
- Reactivate a funding subcommittee that will develop a plan to assess anticipated maintenance and enhancement costs, identify ongoing funding sources, and leverage active projects as applicable

* This plan can be found on the KWIEC website at www.kwiec.ky.gov and is available for download as a pdf file.

Each of these initiatives is being addressed by one or more members of the KWIEC and success will be reported on in next year's Annual Public Safety Report.

SCIP Follow-up Workshop

In April the SCIP follow-up workshop was conducted with key members of the KWIEC and the PSWG. The purpose of this workshop was to determine how best to implement the changes and recommendations that resulted from the sponsored KWIEC workshop and to make other revisions determined necessary as part of the annual review. Several minor changes and updates were made to the document.

Sometime after this session, the Federal Office of Emergency Communications notified Kentucky that they were intending to change several of their requirements. Rather than present a document to the KWIEC which would immediately require revisions, it was decided to wait on the changes and reconvene the group once the new requirements were finalized. Those changes have since been received, and it is expected that all revisions will be complete and the document presented to the KWIEC in the fourth quarter of 2009.

Evaluation of Wireless Communications Architecture, Standards and Strategies

- ***KRS 42.738 (1)*** *(Continued) - The Kentucky Wireless Interoperability Executive Committee shall be responsible for the evaluation of all wireless communications architecture, standards, and strategies. The executive director shall provide direction, stewardship, leadership, and general oversight of information technology and information resources.*

The Public Safety Working Group evaluates all wireless communications architecture, standards, and strategies of interest to the KWIEC. They then brief the KWIEC on the group's findings and recommendations. The KWIEC is then able to better make decisions based on an in-depth analysis made by experts in the field. This only makes sense as the Public Safety Working Group's members benefit from a skill set that uniquely qualifies them to evaluate all the technical facets involved in meeting this requirement.

Currently the KWIEC has three primary architectural and standards issues that it is considering or must consider in the coming year. These are P-25, narrow banding, and the 'D' block frequencies initiatives.

P-25

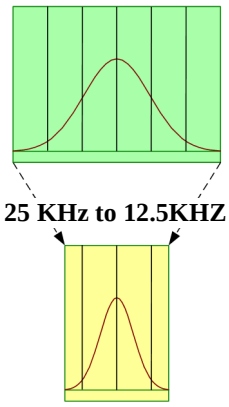
The P-25 standard is currently the only way that digital interoperability can be achieved at the radio level. There are various other ways to implement partial digital interoperability through cross-connect systems, hybrid radio systems, and other work-around strategies, but none of these offer the canned interoperability of P-25.

Unfortunately, P-25 has several issues which are slowing its statewide adoption. First, it has not been federally mandated as a public safety requirement; second, the codec used in the P-25 tends to provide somewhat inferior sound quality to newer digital systems employing superior codec's. Third and most importantly, the cost of P-25 typically is two or more times the cost of a non P-25 radio system which causes most local agencies to balk at the cost of deploying them.

It should be noted that the KWIEC decided not to require its adoption due to the high cost involved in fielding these units. The group did however recommend their use where possible. All major statewide voice radio networks such as those employed by the Kentucky State Police, and the Department of Military Affairs are P-25 compliant.

Narrow banding

In the past, agencies were assigned channels with a bandwidth of 25KHz for their wireless requirements. The 25KHz bandwidth was considered the minimum acceptable bandwidth at the time it was issued and certainly worked well for the transmissions systems in use at the time. Newer technologies have since reduced the requirement for wideband voice transmissions to less than half of what was previously required and 12.5KHz channels have been the norm for many years. The older 25KHz legacy channel assignments are called "wideband" channels to differentiate them from the newer 12.5KHz "narrowband" assignments.



Over the years, the Federal Communications Commission (FCC) has opened new frequency bands as demand for frequencies grew. This demand has and will continue to outpace availability. With the limitations on frequency, it became necessary to reconsider the usage of existing frequencies. To this end, where previously both wideband and narrowband channels have been available, the Federal Communications Commission has decided to eliminate the space hogging wideband channels in use today in frequency bands below 512MHz . Simply put, each 25KHz voice channel's bandwidth below 512MHz, is being narrowed to a 12.5Khz channel. Of course this does not simply mean that users can recover two narrowband channels from a single wideband channel since the actual licensing and allocation process[†] is more complicated.

This FCC mandate is called the narrowband conversion or narrow banding and its completion has been mandated to occur by 2013. This narrow banding mandate is expected to be the most important issue on the table for the next two years.

This FCC decision will require any Kentucky Public Safety Agency still using wideband channels to decommission those older radio systems and purchase newer systems. Noncompliance is not an option and anyone found using wideband channels after the 2013 deadline will be in violation of the FCC mandate which can result in fines or loss of their license.

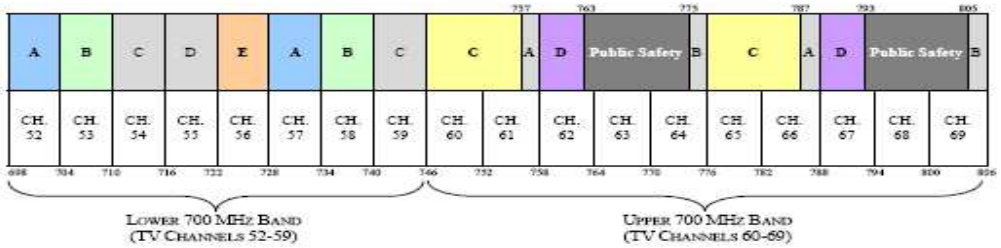
With a large portion of the first responders using older wideband VHF frequencies, it can be seen that this mandate has huge ramifications for the state. It is certainly one of the most important challenges that Kentucky is facing over the next two years.

[†] The final channel plan depends on several factors including channel type (voice/data, exclusive use, shared, or adjacent to shared), channel location in the spectrum, and other factors.

‘D’ Block

There has been much speculation and discussion over the ‘D’ Block frequency spectrum. This bandwidth was made available as a result of the FCC Mandate to decommission analog television stations. This spectrum is valuable to first responders due to its propagation characteristics and in fact, the ‘D’ block frequencies have been described as beachfront property in the radio spectrum.

Revised 700 MHz Band Plan for Commercial Services



Block	Frequencies (MHz)	Bandwidth	Pairing	Area Type	Licenses
A	698-704, 728-734	12 MHz	2 x 6 MHz	EA	176
B	704-710, 734-740	12 MHz	2 x 6 MHz	CMA	734
C	710-716, 740-746	12 MHz	2 x 6 MHz	CMA	734
D	716-722	6 MHz	unpaired	EAG	6
E	722-728	6 MHz	unpaired	EA	176
C	746-757, 776-787	22 MHz	2 x 11 MHz	REAG	12
A	757-758, 787-788	2 MHz	2 x 1 MHz	MEA	52
D	758-763, 788-793	10 MHz	2 x 5 MHz	Nationwide	1 *
B	775-776, 805-806	2 MHz	2 x 1 MHz	MEA	52

* Subject to conditions respecting a public/private partnership.

The blocks shaded above in gray (Lower 700 MHz Band C and D Blocks and Upper 700 MHz Band A and B Blocks) were auctioned prior to Auction 73.

Figure 1 – Revised 700 MHz Plan

The FCC’s desire was to auction the ‘D’ block to a single nationwide bidder or 58 regional bidders. There were strict requirements put on this block, and consequently it went unsold. That forced the FCC to reevaluate its options. The Public Safety Working Group briefed the KWIEC on the situation and after discussion, the KWIEC asked the Chairperson to draft a letter to the FCC to state Kentucky’s position on this issue. On October 28, 2008, a letter[‡] was sent to the FCC indicating that Kentucky supported the reallocation of the spectrum to public safety.

[‡] This letter along with other supporting and reference documentation is available on the KWIEC website.

Report on Compliance

- *KRS 42.738 (1) (Continued) - The executive director shall report by September 15th annually to the Interim Joint Committee on Seniors, Veterans, Military Affairs, and Public Protection and the Interim Joint Committee on State Government on progress and activity by agencies of the Commonwealth to comply with standards to achieve public safety communications interoperability.*

Kentucky uses the new SAFECOM[§] Interoperability Continuum to measure its interoperability level. The Annual Public Safety Report describes the activities in progress to achieve public safety communications interoperability.

The new continuum now recognizes the fact that what works well for one state does not necessarily work well for another. The old interoperability continuum chart pressed states to go as far to the right on the chart as possible. The old perception of states or agencies far to the left was that preparedness seemed to be lower. This new chart eliminates the arrow and more appropriately identifies that interoperability success can be met at different levels depending on the requirements of the state, the region, or the agency.

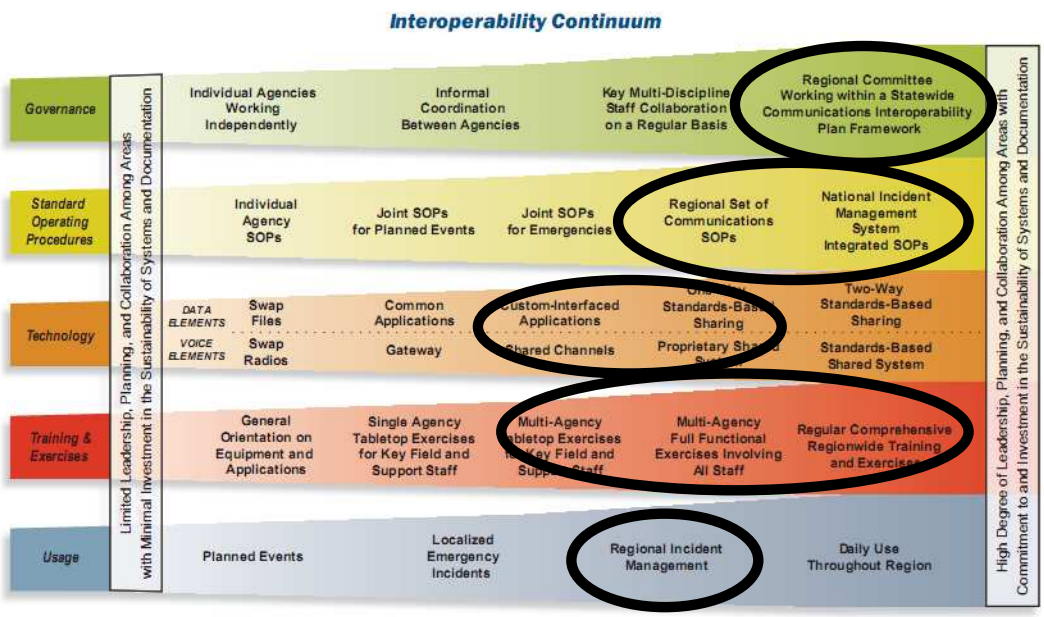


Figure 2 – New Interoperability Continuum

The chart above has areas circled indicating Kentucky's interoperability in the five areas tracked by this chart. It can be seen that Kentucky does not fall directly onto a single location in several areas, and as previously described, this is not a bad thing, and is to be expected. Summary explanations are presented below.

[§] SAFECOM is a Homeland Security interoperability program

Summary Explanations

Governance
The KWIEC is the statewide committee which works with regional agencies such as the Kentucky State Police headquarters elements and the Department of Military Affairs regional Posts, Armories, and Depots. The makeup of the KWIEC also has regional representation including the association of Sheriffs, Fire, and others.

Standard Operating Procedures (SOPs)
Depending on the agency and incident, Kentucky covers both Regional SOPs and National Incident Management System (NIMS) SOPs. Kentucky uses and trains its first responders on NIMS recommendations and requirements and regional SOPs are written to comply with NIMS requirements.

Technology
Kentucky has implemented a network of "Shared Channels" for its means of interoperable voice communications through its Voice Mutual Aid Program. Kentucky has implemented a "Propriety Shared System" for its means of interoperable data communications through its Mobile Data Network.

Training and Exercise
Kentucky has implemented "Regular Comprehensive Regional Training and Exercises" to train and exercise its interoperability programs, the most recent exercise being the Pandemic exercise at Midway, Kentucky, in August 2009. In a like manner for training, Kentucky hosted the Communications Unit Leader Training Course (COM-L) training course at the Wendell Ford training center.

Usage
Regional incident management is used and exercised in Kentucky. This aligns well with our voice interoperability system which uses KSP regional monitoring.

COM-L Training

Forty-three communications leaders attended the emergency responder communications leader training hosted in Wendell Ford training area in August. This training qualifies graduates to lead incident management teams and provides them with the additional skills needed to effectively develop plans and procedures.

Three members of the Public Safety Workgroup including the Chair and Co-chair attended this training. As can be expected, the training received will assist these members in their duties as members of the PSWG.

Interoperability Programs and Projects

A status of the current interoperability programs and projects is described in the Annexes of this document.

Primary Wireless Communications - Project Plans

- *KRS 42.738 (2) – The Kentucky Wireless Interoperability Executive Committee shall serve as the advisory body for all wireless communications strategies presented by agencies of the Commonwealth and local governments. All state agencies in the Commonwealth shall present all project plans for primary wireless public safety voice or data communications systems for review and recommendation by the committee and the committee shall forward the plans to the chief information officer for final approval. Local government entities shall present project plans for primary wireless public safety voice or data communications systems for review and recommendation by the Kentucky Wireless Interoperability Executive Committee.*

This year several changes were made to the review process that allowed the KWIEC to streamline and simplify the process. This has been beneficial to not only the KWIEC and its support groups, but all the applicant agencies as well.

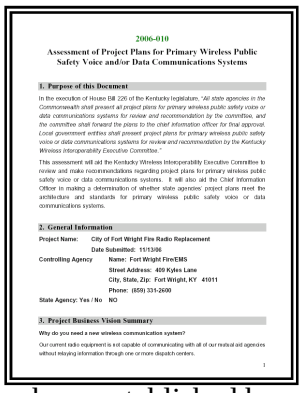
The KWIEC successfully instituted the following process adjustments:

1. Streamline the review and approval process where possible
2. Complete the assessment review process in a proactive manner
3. Simplify the submission process for local agencies

Each of these processes is explained in detail in the following pages.

Streamlined Project Review/Approval Process

In previous years the KWIEC received and evaluated each and every project submitted regardless of how many times they had seen identical projects submitted by different agencies. This required members to look at six to twenty page project plans at least three times per month. The KWIEC members decided to streamline the process and eliminate as much of this duplication of effort as they could by modifying the process.



2006-010

Assessment of Project Plans for Primary Wireless Public Safety Voice and/or Data Communications Systems

1. Purpose of this Document

In the execution of House Bill 226 of the Kentucky legislature, "*All state agencies in the Commonwealth shall present all project plans for primary wireless public safety voice or data communications systems for review and recommendation by the committee, and the committee shall forward the plans to the chief information officer for final approval. Local government entities shall present project plans for primary wireless public safety voice or data communications systems for review and recommendation by the Kentucky Wireless Interoperability Executive Committee.*"

This assessment will aid the Kentucky Wireless Interoperability Executive Committee to review and make recommendations regarding project plans for primary wireless public safety voice or data communications systems. It will also aid the Chief Information Officer in making a determination of whether state agencies' project plans meet the architectures and standards for primary wireless public safety voice or data communications systems.

2. General Information

Project Name: City of Fort Wright Fire Radio Replacement
Date Submitted: 11/13/06
Controlling Agency: Name: Fort Wright Fire/EMS
Street Address: 409 Kyles Lane
City, State, Zip: Fort Wright, KY 41011
Phone: (859) 331-2600
State Agency: Yes / No: NO

3. Project Business Vision Summary

Why do you need a new wireless communication system?

Our current radio equipment is not capable of communicating with all of our mutual aid agencies without relaying information through one or more dispatch centers.

1

All project assessments submitted to the KWIEC will be reviewed and processed by the KWIEC Facilitator. This remains constant. The next step depends on what type of project has been submitted. The following processing system has been established by the KWIEC.

This new process is applicable to local agencies submitting assessments for primary wireless communications projects only. It relies on the KWIEC Facilitator and the Public Safety Working Groups to use the previous KWIEC decisions and apply them to new project assessments under strict guidelines. The process is expanded on below.

- Any local agency project which falls into one of the below listed categories has already been reviewed by the KWIEC and does not need to be resent to the PSWG or the KWIEC. In this case, the KWIEC Facilitator will process the entire assessment.
    1. Projects which fall under an already approved state standard such as Mobile Data.
    2. Augmentations to an already approved and existing system such as the simple acquisition of mobile or handheld radios.

- Any local agency project which is considered a minor operational update or affects the infrastructure minimally will be processed by the KWIEC Facilitator and sent to the PSWG for review. Projects which fall into this category are considered to be the responsibility of the Public Safety Working group to review.
    1. Expansions and augmentations to existing systems which simply increase the existing capabilities of an already approved system. An example of this would be an agency that has three repeaters in their network and desires to deploy a fourth.

- Projects which will continue to be sent to the KWIEC are:
    1. All project plans submitted by state-level agencies
    2. New projects or pilots which are considering the use of new or untested technology
    3. Projects which entail the complete replacements of infrastructure or major augments or upgrades
    4. Projects which have regional impact
    5. Any other project that the PSWG or Facilitator feels the KWIEC needs to see

The purpose of this new process is to eliminate the time wasted by the KWIEC and the time applicants must wait on replies to their assessment requests. It is evident that the amount of time saved by this new process is substantial and frees the KWIEC members to spend their time on more productive matters.

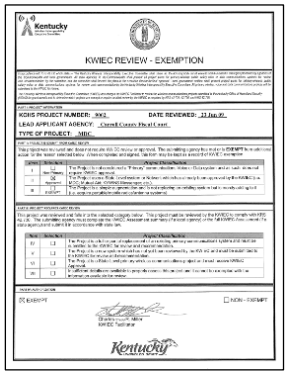
It should be noted that wireless projects which are not considered to be primary means of communications have always been exempt from KWIEC review. When a project assessment is submitted that falls into this category, the KWIEC Facilitator replies to the applicant indicating that the project is exempt. This has always been the case, and no change has been made to this process.

Proactive Versus Reactive Project Reviews

This year marked another process change in the manner in which the KWIEC evaluates the project plans of agencies receiving grants. A new process was initiated this year which placed the KWIEC reviews before the actual award of the grants. This was a logical and important step since previously some grants were awarded that did not comply with minimum requirements for public safety communications. The new process now in place will eliminate this problem.

The new process requires the KWIEC Facilitator to prescreen all communications grants submitted to granting agencies. For this first year only the grants submitted to the Kentucky Office of Homeland Security were evaluated to ensure that the process would be successful, and to ensure that it was maintainable.

The KWIEC Facilitator reviewed 176 projects submitted for grants this year and was able to identify those that fell into the preapproved category or exempt category prior to involving the Public Safety Working Group or KWIEC. Nearly two thirds of those reviewed fell into one of those categories and reduced the amount requiring PSWG or KWIEC review to less than one third of that amount.


KWIEC REVIEW - EXEMPTION

The Public Safety Workgroup then took over and was able to identify questionable or nonviable projects. Ultimately this new process has saved substantial time and money for the Office of Homeland Security, the KWIEC, and the end users.

As a part of this new process, the KWIEC Facilitator proactively reviewed 176 Kentucky Office of Homeland Security grant requests to determine which projects should be reviewed under the KWIEC directives. Of the 176 reviewed by the Facilitator, 84 projects were returned to the grants managers since they were not communications related.


PUBLIC SAFETY WORKGROUP REVIEW

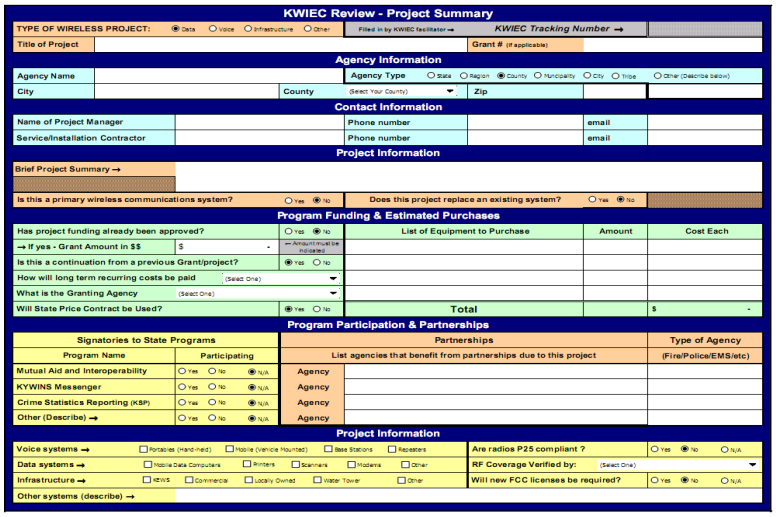
Of those remaining, 51 communications projects were exempted or met the Facilitator level approval. The remaining 41 communication projects were reviewed by the Public Safety Working Group over a two day session. Applicants were called if needed, and, in more than one case, the engineers in the group were able to clarify vendor promises. At the conclusion of the session, the Chairperson of the PSWG attached letters to each package with specific instructions to the applicant agencies.

For next year, the KWIEC Facilitator or the Chairperson of the Public Safety Working Group will accompany the grants managers as they go out and host their regional grant workshops. The intention will be to get ahead of the problems and properly advise all applicants of the KWIEC requirements.

New Local Agency Project Assessment Form

Previously, local agencies were asked to submit their projects for review using the six page project assessment template. Unfortunately, the questions asked on the templates allowed for subjective answers, and more often than not, did not answer many of the simple questions needed for proper evaluation. While this template worked well for large state level projects where a business case analysis may be needed, it is unwieldy and unneeded for local agencies who desire simple upgrades or augments to their system. For this reason, a new local agency review form was created.

This form was sent to the KWIEC, its working groups, and to granting agencies including the Kentucky Office of Homeland Security for review. The form was revised several times until all agencies were pleased with it. In the end, all groups and agencies felt that this form better served the locals and the KWIEC. It was officially adopted by KWIEC resolution and has been used with great success.



KWIEC Review - Project Summary

TYPE OF WIRELESS PROJECT: Data / Voice / Infrastructure / Other — Filled in by KWIEC facilitator → KWIEC Tracking Number →

Title of Project | Grant # (if applicable)

Agency Information

Agency Name | Agency Type: State / Region / County / Municipality / City / Tribe / Other (Describe below)

City | County (Select Your County) | Zip

Contact Information

Name of Project Manager | Phone number | email

Service/Installation Contractor | Phone number | email

Project Information

Brief Project Summary →

Is this a primary wireless communications system? Yes / No — Does this project replace an existing system? Yes / No

Program Funding & Estimated Purchases

Has project funding already been approved? Yes / No — List of Equipment to Purchase | Amount | Cost Each

→ If yes - Grant Amount in $$ $ - (← Amount must be indicated)

Is this a continuation from a previous Grant/project? Yes / No

How will long term recurring costs be paid (Select One)

What is the Granting Agency (Select One)

Will State Price Contract be Used? Yes / No — Total $ -

Program Participation & Partnerships

Signatories to State Programs		Partnerships		Type of Agency
Program Name	Participating	List agencies that benefit from partnerships due to this project		(Fire/Police/EMS/etc)
Mutual Aid and Interoperability	Yes / No / N/A	Agency		
KYWINS Messenger	Yes / No / N/A	Agency		
Crime Statistics Reporting (KSP)	Yes / No / N/A	Agency		
Other (Describe) →	Yes / No / N/A	Agency		

Project Information

Voice systems → Portables (Hand-held) / Mobile (Vehicle Mounted) / Base Stations / Repeaters — Are radios P25 compliant ? Yes / No / N/A

Data systems → Mobile Data Computers / Printers / Scanners / Modems / Other — RF Coverage Verified by: (Select One)

Infrastructure → KEWS / Commercial / Locally Owned / Water Tower / Other — Will new FCC licenses be required? Yes / No / N/A

Other systems (describe) →

Figure 3 – Local Agency Project Summary Form

Excel was used as the base program since most agencies have access to this program and it is easy to maintain and update. It uses fields and check boxes, automatic calculations, and protection features to keep users from filling out or damaging the form when they submit it.

This single page project summary document now asks all the right questions and is simple for the local agencies to fill out and for the KWIEC to review.

State Agency Assessment Process

- *KRS 42.738 (2) – The Kentucky Wireless Interoperability Executive Committee shall serve as the advisory body for all wireless communications strategies presented by agencies of the Commonwealth and local governments. All state agencies in the Commonwealth shall present all project plans for primary wireless public safety voice or data communications systems for review and recommendation by the committee and the committee shall forward the plans to the chief information officer for final approval. Local government entities shall present project plans for primary wireless public safety voice or data communications systems for review and recommendation by the Kentucky Wireless Interoperability Executive Committee.*

The state agency assessment process has not changed since it was instituted. Since state agencies typically deal with projects which cost hundreds of thousands to millions of dollars, and since the impact of the project ultimately affects multiple agencies, it was decided to continue to use the original project assessment template.

It is important to remember that all primary wireless communications projects submitted by state agencies must explain their project plan in detail. This is important since a state level project in this category can be disapproved by the KWIEC. For this reason state level plans continue to go through the entire review process and must ultimately be approved in writing.

Members of the KWIEC are often stakeholders or sponsors in state-level wireless interoperability projects. Previous and current examples of this are the Voice Mutual Aid and Interoperability project where the CIO of Homeland Security was the Sponsor and a member of the KWIEC, and the current KEWS project where the Deputy Commissioner is the sponsor and also serves as the KWIEC Chair.

Most state level projects are identified in the State Communications Interoperability Plan as long term initiatives. Since these projects typically require large amounts of funding they must be planned years in advance and are usually chartered by priority as funding becomes available.

The state level assessment process can be best understood by reviewing the figure on the following page.

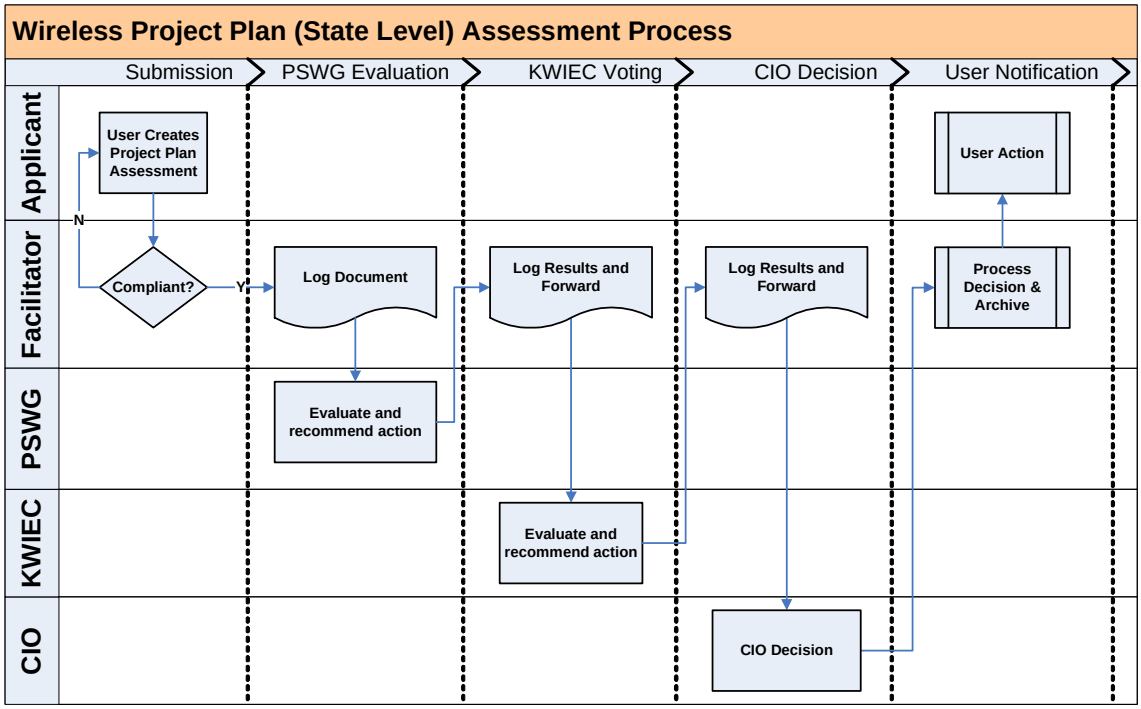


Figure 4 – State Level Assessment Process

Develop Funding and Support Plans

- *KRS 42.738 (3) - The committee shall develop funding and support plans that provide for the maintenance of and technological upgrades to the public safety shared infrastructure, and shall make recommendations to the executive director, the Governor's Office for Policy and Management, and the General Assembly.*

- *KRS 42.736 (5) - Public safety shared infrastructure" means any component that by the nature of its function or physical characteristics can be used by multiple agencies to implement or support primary wireless public safety voice or data communications systems. This shall include but not be limited to towers, equipment shelters, radios, and other electronic equipment, backbone communications networks, and communications-related software.*

- *KRS 42.738 (10) - The committee may establish additional working groups as determined by the committee.*

In previous years, the Chairperson of the KWIEC, Commissioner, or CIO of the Commonwealth Office of Technology met with legislative members to brief them on critical interoperability projects and programs. This meeting would ensure that the General Assembly or its subcommittee or group was fully aware of the status of the public safety wireless communications systems in place. The Chairperson would emphasize the importance of maintaining and upgrading the critical public safety infrastructure and to gain their support for funding. It was in one of these briefings several years ago where the limited voice and data interoperability and the deteriorating condition of the KEWS network was brought to light. Thankfully, each of these issues was identified and, over time, funding was received to address each of these issues.

With the KEWS network project fully funded and expected to be complete in 2011 and the Voice Mutual Aid network augmentation being expanded by the PSIC grant funds, it is now time to focus the KWIECs efforts on the long term funding requirements to move the state to the eventual convergence of the voice and data networks.

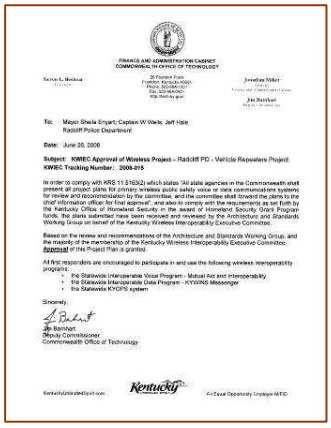
Since funding is becoming difficult to obtain, the KWIEC felt that it was important to charter a funding initiatives workgroup dedicated to this mandate. Two senior members of the KWIEC co-sponsored this effort, wrote the charter, and a third has volunteered to chair it.

With the creation of this workgroup dedicated to funding initiatives, it is hoped that future sources of funding may be found and taken advantage of.

Wireless Project Reviews

- *KRS 42.738 (4) - The executive director shall examine the project plans for primary wireless public safety voice or data communications systems of state agencies as required by subsection (2) of this section, and shall determine whether they meet the required architecture and standards for primary wireless public safety voice or data communications system.*

After the Public Safety Working Group and members of the Kentucky Wireless Interoperability Executive Committee have made their recommendations for state level projects, the project plan and recommendations of the KWIEC are provided to the executive director, deputy commissioner, and CIO of the Commonwealth Office of Technology. It is reviewed to insure that the project meets all the architecture standards, then a formal letter of authorization is returned to the submitting agency.



FINANCE AND ADMINISTRATION CABINET
COMMONWEALTH OFFICE OF TECHNOLOGY

To: Mayor Sheila Enyart; Captain W Wells; Jeff Hale
Radcliff Police Department

Date: June 26, 2009

Subject: KWIEC Approval of Wireless Project – Radcliff PD – Vehicle Repeaters Project
KWIEC Tracking Number: 2009-015

In order to comply with KRS 11.515(2) which states "All state agencies in the Commonwealth shall present all project plans for primary wireless public safety voice or data communications systems for review and recommendation by the committee, and the committee shall forward the plans to the chief information officer for final approval", and also to comply with the requirements as set forth by the Kentucky Office of Homeland Security in the award of Homeland Security Grant Program funds, the plans submitted have been received and reviewed by the Architecture and Standards Working Group on behalf of the Kentucky Wireless Interoperability Executive Committee.

Based on the review and recommendations of the Architecture and Standards Working Group, and the majority of the membership of the Kentucky Wireless Interoperability Executive Committee, Approval of this Project Plan is granted.

All first responders are encouraged to participate in and use the following wireless interoperability programs:

- the Statewide Interoperable Voice Program - Mutual Aid and Interoperability
- the Statewide Interoperable Data Program - KYWINS Messenger
- the Statewide KYOPS system

Sincerely,

Jim Barnhart
Deputy Commissioner
Commonwealth Office of Technology

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As in previous years, this process has been integrated into the project review process and is seamless to the submitting agencies.

KWIEC GOALS

Each year the KWIEC adopts goals that they would like to see fulfilled or worked toward. While these goals are not always accomplished, it does provide a steering mechanism for the KWIEC and a yardstick to aid in measuring their efforts. The goals are discussed in each of the KWIEC meetings.

Goals from 2008

The rearticulated goals the KWIEC adopted in mid 2008 are listed below along with a short summary explanation.

Goal 1 - Continue efforts to improve statewide interoperability programs for public safety

Goal 4[**] - Publish and begin implementation of the long term Strategic plan (SCIP) for communications interoperability for the Commonwealth.

When the SCIP was published, it addressed the near term and long term efforts for interoperability. Both of these goals were met with the publishing and approval of the SCIP. As mentioned elsewhere in this document, the SCIP is a living document that will continue to grow and be revised. For the purposes of KWIEC goals, this single document has met the desired outcome of the KWIEC.

Goal 2 - Increase stakeholder awareness and utilize outreach programs to promote public safety and the communications interoperability effort

In the times of budget cuts and minimal travel authorizations, this goal was more difficult to meet than initially thought. It was decided that the best way to meet this goal was to use the KWIEC website, and to avail ourselves of other approved regional training visits where possible. The State Interoperability Coordinator (a Kentucky State Police employee) was able to add a short session to his regional training efforts and thereby meet some of the KWIEC outreach efforts. Also, additional emphasis was placed on providing informational briefings to the KWIEC (the most influential group of stakeholders in the state) for them to take back to their agencies to further their outreach efforts.

Goal 3 - Complete the upgrade of the KEWS Eastern Segment

This goal was not achieved. The project is under the management of Harris-Stratex Networks, Inc., who failed to meet numerous milestones due to equipment and management issues. Harris Stratex has since drawn up a new baseline for their schedule and is now promising completion by March 2010.

[**] Goal 4 is taken out of order since it relates to goal 1.

Goals for 2009

GOAL 1 - Merge the Architecture and Standards Working Group into the Public Safety Working Group and expand their level of responsibility.

This goal has been accomplished and is explained elsewhere in this document.

GOAL 2 - Charter and staff a funding subcommittee with a responsibility of finding and evaluating different funding programs, streams, and grants.

This goal has been accomplished and is explained elsewhere in this document.

GOAL 3 - Complete the Eastern portion of the KEWS Digital upgrade project.

This is a carry over from last year and has been kept since the KEWS system is critical to so many other interoperability initiatives.

GOAL 4 - Identify immediate-need state level wireless communications projects which are unfunded.

The KWIEC decided to adopt this goal since President Obama's administration has made large funding packages available as part of the national stimulus plan. The KWIEC and the PSWG are actively researching and recommending communications interoperability state level "Shovel Ready" projects should funding become available.

Conclusion

The KWIEC has and will continue to be a driving force in steering the interoperability efforts of the commonwealth. With the completion of the Statewide Interoperability Communications Plan, the creation of a Funding Workgroup and refocusing the Public Safety Working Group, the KWIEC has successfully met and is on track to continue to meet its mandates.

This document will be available for download as a PDF file from the KWIEC website located at www.kwiec.ky.gov. For additional information, questions, or comments concerning this document please contact the KWIEC Chairperson Jim.Barnhart@ky.gov or the KWIEC Facilitator CharlesR.Miller@ky.gov via email.

ANNEXES – Report on Programs and Projects

Reports were requested from key agencies concerning their interoperability projects. Each Report received is provided in the following Annexes.

ANNEX A – KEWS PROJECT UPDATE

Statewide Shared Public Safety Infrastructure - Kentucky Emergency Warning System (KEWS)

The Kentucky Emergency Warning System (KEWS) is a thirty year old statewide analog microwave communications network which supports the communications requirements of local, state, and federal first responder agencies. Its primary purpose is to support communications for these agencies in times of emergencies and additionally provides connectivity and support for their day-to-day operations.

After nearly thirty years, the system is well past the end of its expected life and clearly in need of replacement. To that end, the Commonwealth commissioned Harris Stratex Networks, Inc., to upgrade the KEWS network to a new state-of-the-art digital system and replace or upgrade the aging outside plant systems supporting the network. The new system will provide a huge increase in traffic-carrying capability, exceptional reliability, and will position the Commonwealth to support new and emerging technologies.

This ongoing infrastructure upgrade project was initiated in late 2006 as a multi-year effort with an estimated price tag of $45 Million. As of July 1, 2008, it has been fully funded.

The scope of effort to upgrade this statewide network is daunting. Replacement of all old radio systems with new digital radio systems is but one small aspect of the upgrade. Additional components of this project include installation of new towers, upgraded power systems, generators and battery systems, upgrading electrical grounding, replacing shelters, reinforcing all towers to withstand additional ice and wind loads, and extending towers as needed. When completed, the new system will be highly survivable and offer additional benefits to every agency that uses the system.

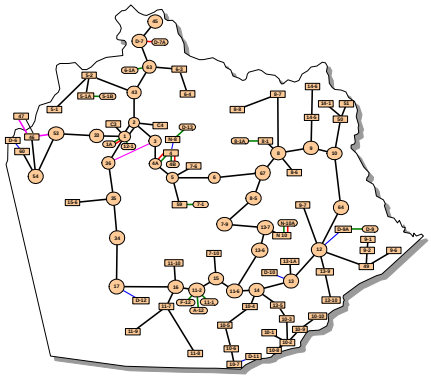
The upgraded system will be an all-digital Internet Protocol (IP)-based microwave network capable of directly supporting current and emerging technologies including video and voice over IP. It provides a network that is superior to the existing system in every conceivable way and, when fully implemented, will provide a self-healing, robust backbone that will support public safety agencies throughout the Commonwealth for decades to come.

Since this public safety system consists of over 140 communication sites serving all 120 counties in the Commonwealth, the project was split into two phases with separate objectives. This was done primarily to ease the financing and management burden of such a large project.

The project phases are: Phase 1 – Discovery, and Phase 2 – Implementation. Phase 2 was further divided into East and West. Phase 1 was completed two years ago, and Phase 2 is ongoing.

The East

The KWIEC members adopted the completion of the eastern portion of the KEWS upgrade as a goal since, as the largest interoperability project in the Commonwealth, nearly every current and future interoperability project will be affected by it.



Unfortunately, this goal has not been met since the project incurred delays due to weather, radio firmware and network hardware issues discovered and reported during the testing of the eastern phase of the project. Since the identification of these issues, Harris Stratex and its partners have worked and resolved these identified issues. The delays, while frustrating, should not be a concern since installation of the radios in the eastern phase has been completed.

The issues found during the radio testing have not affected the civil (Outside Plant) work which has been completed and accepted in the east and is currently underway in the west. The civil work varies by site but consists of improvements in the following areas:

- Installation of new shelters
- Grounding upgrades
- Improvement to electrical service
- Installation of generators, fuel tanks, and auto-start systems
- Tower reinforcements
- Road repairs
- Guy path clearing
- New fencing

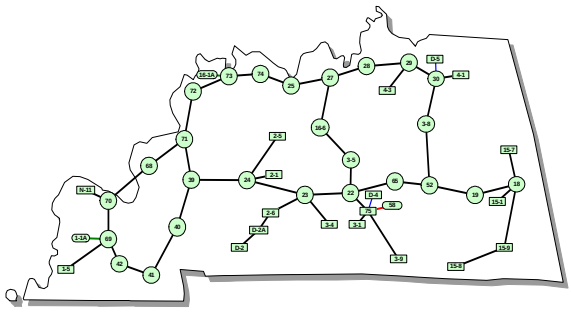
In addition to the civil work, the technical (Inside Plant) work in the East has been completed. Network testing is nearing completion and is expected to be done by October 2009. Again, this work varies by site but consists of installations of the following new equipment:

- Racks
- Radios
- Waveguides and antennas
- Routers and switches
- VoIP multiplexers
- Inside wiring
- Batteries and UPS systems
- Monitoring systems
- Improved cooling systems

Currently nineteen (19) Mobile Data circuits and sixty-two (62) voice circuits are running on the new network. These circuits provide KEWS and Harris with a good baseline for both network quality and monitoring. So far these circuits are operating without incident, and, moreover, they are providing superior service availability to what was being provided on the older analog systems. The final plans are currently under review to complete the cutover of all remaining KEWS circuits in the eastern phase to the new network before mid 2010.

The West

In the Phase I portion of this project, most of the survey and planning work for the West was completed. This has greatly simplified engineering efforts in the West since return site visits were not required on most of these sites. In addition to this, the Eastern portion of the project comprised the brunt of the work in the state. The 88 Eastern sites typically have substandard access roads in mountainous and difficult terrain, and are located hundreds of yards to miles off the main access road. The 45 Western sites are typically easy to access, and are located on small hills just a few hundred feet off a main road.



Currently all work being conducted in the western phase falls into the civil (Outside Plant) category and consists of tasks such as;

- Tower strengthening

- Shelter replacement
- Generator installations
- Site grounding and electric upgrade

The tower modifications and the shelter replacements are scheduled to be completed Q4 2009, while the generator installations and grounding and electric upgrades are scheduled for completion Q1 of 2010. The installation, testing and acceptance of radio and network equipment should start Q2 of 2010.

Tangible benefits

During the ice storm in early 2009, many of the KEWS sites lost commercial power for days and even weeks in some cases. Since this storm affected sites statewide, the benefits of the KEWS upgrade work in the east truly came to light.

Sites in the eastern phase of the network, where the new emergency batteries, UPS and generators were installed, operated flawlessly and provided uninterrupted power and uncompromised communications for the duration of the outage without manual intervention. This allowed staff to concentrate their efforts in the western part of the Commonwealth where it was necessary for staff to travel treacherous, ice covered roads, clear downed trees and face many other hazards in order to install batteries and generators at the sites to keep them in operation.

It can easily be seen that the completed civil work has already returned benefits that can be measured. The project is considered a huge success for the civil work, and when circuit cutovers are completed, it is expected to be just as successful.

ANNEX B – VOICE MUTUAL AID PROJECT

Statewide wireless voice interoperability - Mutual Aid and Interoperability Program

The Voice Mutual Aid program provides a common set of FCC approved analog channels in each of the three major frequency bands in use across the state (150MHz, 450MHz, and 800MHz). The system has proven itself time and again in several real life situations, the most recent being the ice storm which shut down much of the state for weeks on end. Furthermore, since these channels are the same across the nation, communications with our neighboring states is assured. This again played an important part in the recent disaster where our neighboring states mobilized to aid Kentuckians.

To use the system, agencies simply need to sign the Memorandum of Agreement which states that operators and incident commanders have had a certain level of training and agree to abide by the rules. Once this is done, regional interoperability across all channel bands is available for the asking. The program is free of charge and simply requires agencies to program these new shared channels into their radio systems. To date nearly 800 agencies have signed on.

When the Voice Mutual Aid system first went on-line it typically provided a single channel in each band to use for interoperability. Since then, and as planned for in the State Communications Interoperability Plan, the system has been expanded and continues to be expanded. Thanks to federal funds received through the Public Safety Interoperability Communications grant program, this system is currently being expanded with the addition of approximately 345 radio systems. The VHF network is being augmented with up to two dozen sites needed to fill in the coverage gaps identified through actual use. The UHF system is being upgraded with 320 radio systems spread across 80 locations. Finally, the 800MHz system is being augmented by up to a dozen sites. When this upgrade is complete, Kentucky will have the full set of FCC designated voice interoperability channels in the VHF and UHF bands available across the state. The full set of 800MHz voice interoperability channels have been made available in locations where the 800 MHz systems are deployed.

This additional capability will provide incident commanders with the ability to subdivide disasters in logical command and control components. For example, police

could use one common channel, while firefighters use another, and emergency medical services use a third. The benefits of this additional capability can easily be seen.

With the completion of this initiative, it has been estimated that nearly 100% of first responder agencies will be provided coverage by the Voice Mutual Aid network. This coverage along with the automated power backup systems being put in place by the KEWS upgrade will assure that the Voice Mutual Aid network is available to first responders for critical events for many years to come. This final upgrade will effectively complete the 'Shared Channel' technology program in the interoperability continuum.

ANNEX C – MOBILE DATA PROGRAM

Statewide wireless data interoperability - Mobile Data Program

The Mobile Data system is a wireless data network which consists of over 140 communications sites strategically located across the commonwealth. The system provides a shared 19.2Kbps secure data stream and is available to all first responders free of charge. It is designed for mobile users and allows roaming and best signal detection/selection across the network[††]. It can be compared to a data-only version of a modern cellular telephone system, but with less bandwidth and fewer features.

While 19.2Kbps is considered low speed data rate by today's standards, it must be understood that much of the information transferred by first responders is text based. The bandwidth needed to transmit a few dozen characters of information such as license plates, names, and property addresses is minimal and, as such, 19.2 Kbps is usually adequate. There are exceptions to this of course, and this typically comes into play in large metro areas where the number of users desiring access exceeds the capabilities of the shared channel.

One method to relieve the overcrowding of the Mobile Data sites in metro areas is to look to the commercially available infrastructure to augment, but not replace, the system as required. One of the more popular augmentations that metro agencies are using is AirCards or equivalents to alleviate the congestion on the system. It should be noted that while the AirCards work well in normal day-to-day type operations, they proved a fatal weak point when the commercial systems failed, mostly due to power issues, during the adverse weather events that plagued the state this year.

System restructuring

As reported in the 2008 Annual Public Safety Report, the network was under review to determine locations which did not have high enough usage statistics to justify the cost of the sites. This review primarily concentrated on high cost sites and concluded that up to eighteen sites were underutilized. These eighteen sites were turned off for two months to determine the impact to using agencies. Reports were received on only three sites, and after checking population density and overlapping propagation areas, it

[††] *Each fixed site is programmed with one of forty standard channels in the 800MHz frequency spectrum. The user/vehicle employs a mobile radio system which listens for all forty channels and selects the best signal as it roams from location to location.*

was found that only those three sites were needed of the eighteen identified. Those three were turned back on, and the other fifteen were decommissioned. At an average cost of $400 per month per site, it can be seen that over $70,000 dollars will be saved annually by eliminating these unneeded sites.

Future plans for the statewide data network include the consideration and implementation of newer broadband technologies in selected locations. Currently, the cost of integrating a statewide broadband mobile data system is prohibitive, and, as such, the KWIEC can only recommend deploying these newer technologies to areas of high population. In a majority of the rural areas of the state, the existing Mobile Data network will continue to serve for several years.

The State Communications Interoperability Plan has upgrading and augmentation of the Mobile Data system as one of its priorities, and the engineering arm of the KWIEC (the Public Safety Working Group) is actively working toward researching what it will take to meet this initiative.

ANNEX D – KYWINS INSTANT MESSENGER PROGRAM

Statewide Instant Messaging - KYWINS Messenger Program

The Kentucky Wireless Interoperability Network System (KYWINS Instant Messenger (IM) is a secure application which is intended to be useful to first responders across the state. The application works like any other IM system, but has the added benefit of secure user account management, session logging, and Desk-to-Mobile; Desk-to-Desk; and Mobile-to-Mobile communications. Unfortunately with the growth of the system, the "Mobile" portion has become problematic with our current Mobile Data technology.

As the user base on this system continued to grow to several thousand users, the overhead and bandwidth requirements needed by the application increased beyond the capacity of the mobile data network to support. While this is not a problem for users in fixed facilities or even users with broadband wireless access, it simply grew beyond its capability to be practical in the Mobile Data network.

The bandwidth issue was identified early and several code revisions were done to trim the application. These early coding revisions worked very well with the number of users on the system at the time, but as the user base grew, tweaking the code was no longer the best answer. It was determined that a major rewrite of the code would be required to manage the increase in the number of users with the limited available bandwidth of our system. Unfortunately, the funding for a rewrite is unavailable.

It was decided to continue to use the existing application where practical since the application is still considered to be an excellent tool for non-mobile users. For example, it continues to be valuable to operators at Call Centers and Dispatch locations across the state. When the capability of the mobile data system is eventually augmented, this program may be viable again to mobile users.

The State Interoperability Coordinator described the KYWINS Messenger program as being a victim of its own success. Its popularity simply overwhelmed our capability.

ANNEX E – CENTER FOR RURAL DEVELOPMENT

The Center for Rural Development
Annual Report to the
Kentucky Wireless Interoperability Executive Committee

The Center for Rural Development (The Center) became heavily involved in Public Safety Technology and Interoperability in 2001. As the result of the vision of the 5th District Congressman Harold Rogers, a partnership between the Kentucky State Police, the Governor's Office for Technology (GOT) *[now the Commonwealth Office of Technology]* and The Center evolved to address the needs of the underserved areas of the Commonwealth in Southern and Eastern Kentucky. This partnership attacked the challenges facing the small rural agencies that comprise the vast majority of the law enforcement community in Kentucky. The resultant program was the Law Enforcement Technology (LET) program. This program expanded to the point many of the technologies identified have become the standard for the Commonwealth.

The Center continues to support KWIEC in its mandate to achieve interoperability in the Commonwealth. The Center has a statutory position on KWIEC which is held by our president, Lonnie Lawson. The Center has also held a position on the Architecture and Standards Working Group since its inception and is heavily involved in plan assessments and has participated in peer review sessions. The Architecture and Standards Working Group has now been merged with the Public Safety Working Group which has greatly streamlined many processes and reduced redundant efforts performed by both groups.

The Center is the host agency for the Rural Law Enforcement Technology Center (RULETC) in Hazard, KY. RULETC is a specialty center within the National Law Enforcement and Corrections Technology Center system (NLECTC). NLECTC is a program of the National Institute of Justice, the research and development agency with the U.S. Department of Justice. RULETC's primary focus is to provide support to small and rural law enforcement.

As part of RULETC's commitment to domestic preparedness, it has developed a fully equipped self-contained low cost technology demonstration trailer. This unit demonstrates how ingenuity and innovation can work to save thousands of taxpayer dollars while meeting the needs of first responders during a critical incident. Housed in a former FEMA housing unit, it is a self-contained unit that can support two operators for up to two weeks and only requires restocking of supplies to extend the time in the field. It contains fully interoperable communications capability, including amateur and aviation band radios,

satellite-based internet connectivity, as well as voice over internet protocol (VoIP) telephony. The unit is also equipped with generators to provide electricity should commercial power not be available, as was the case in the 2009 ice storm.

Ninety-five percent of the technology in the demonstration trailer is commercially available off-the-shelf technologies that can be tailored to meet the needs of any particular agency. RULETC, with the support of NIJ, has now equipped it with a low-cost aerostat system that can serve as a platform for extending communication range, providing aerial surveillance and situational awareness, or many other technologies.

This unit participated in an exercise simulating a pandemic event in November of 2008. Even though the satellite service was not 100% operational, it still provided sufficient bandwidth to allow the successful completion of the assigned tasks.

It is important to note the use of satellite-based services is one of the biggest challenges facing anyone wishing to develop or procure a response unit. Most providers have not been exposed to the world of public safety and are just now beginning to realize their role in domestic preparedness and critical incident response. RULETC experienced service outages, unannounced maintenance windows, along with uncontrolled development and testing on production systems. It took many "conversations" and promises to report our experiences honestly and factually, if asked, to get the attention a unit of this nature requires. We are pleased to report the relationship with our provider is now in a much better state.

The relationship with NIJ has provided The Center access to many highly qualified and experienced individuals who have made contributions to the Public Safety Working Group already. As the RULETC program interacts with agencies from all across the country, needs and solutions will be identified that can be brought back to the PSWG for consideration here at home.